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# AMANITINE AND ITS ANTIDOTE.

BY CHARLES MACILVAINE, OF PHILADELPHIA.

(Concluded from page 9.)

The caps range in color from the bright scarlet of the Amanita muscarius, or poison-fly agaric, to the lemon-yellow of the A. mappa, and pure satiny white of the A. bemus and A. phalloid. Their stems are free from the gills, and are surrounded near the top with a kid-like apron or ring. At the base of the stem is a *bulb which is covered with a sheath or volva.* From this sheath or volva the poisonous Amanita invariably springs. As the investing membrane, in the shape of warts, ring, or volva, is frequently evanescent, one or all may be absent in aged plants; but the volva or remains of it, is almost universally found, if the plant is carefully removed from the ground. They grow in woods, uncultivated ground, on the margin of pastures near woods in fence corners, and by their great resemblance when young to the common mushroom are frequently mistaken for it. The common mushroom never has a volva, and is seldom found in woods. It has pink and purple gills, and a much shorter stem than the Amanita.

To Mr. Julius A. Palmer, of Boston, is due the segregation of the Amanita group, and the pointing to it as the only one known to contain the subtile deadly alkaloid which is the subject of this article—Amanitine.

In an article from his pen, contributed to the *Moniteur Scientifique*, of Paris, 1879, he says: "Mushrooms are unfit for food by decay, or other cause producing simply a disagreement with the system, by containing some bitter, acrid, or slimy element, or by the presence of a wonderful and dangerous alkaloid which is absorbed in the intestinal canal. This alkaliloid, so far as is known, is found only in the Amanita family."

"So long ago as 1868, Drs. Currie, Vigier, Smidberg, and Koppe, isolated this alkaloid, and it has formed a part of our pharmacopia since that time.

The toxic properties of the Amanita have long been known. The inhabitants of Northern Russia drink a decoction of, or eat the dried Amanita muscarius (poison-fly agaric) for the purposes of narcotism and intoxication, and the urine of those who have partaken of it is in demand for future orgies, which is similar to those produced by alcohol.

M. Sicard, author of the "Histoire Naturelle des Champignons Comestibles et Vinineux," Paris, 1883, experimented with Amanitine on dogs. He says: "Recently I have sought an appropriate antidote—an antidote of which the effects after absorption should be diametrically opposed in the system to those produced by the alkaloid of the mushroom—defined as an acrid and stupefying poison." After the absorption of the poison by a dog, M. Sicard, in following up his theory, injected subcutaneously two milligrammes of nitrate of pilocarpine, and a half hour afterwards a second injection with the same dose. After friction and the administration of five grammes of nitrate of potash dissolved in one hundred grammes of a solution of marshmallows, the dog recovered. "In strict truth," says M. Sicard, "I must say that the dog never recovered his normal condition; but the progress of the poison ceased, and he at least lived."

Dr. Gautier, in a work entitled "Les Champignons," Paris, 1884, says: "The use of atropine has been advised, not only to combat narcotic symptoms, such as those produced by opium poisoning, but as an antidote for muscarine—not yet perfectly isolated from the Amanita muscarius." The experiments that we have made upon animals in order to study the antagonism of atropine, and reciprocally, against the toxic elements of the Amanita bulbosus, Amanita muscarius, etc., have furnished negative results only. Yet it would be irrational to conclude that it lacked in efficacy upon man; and in all cases of poisoning by toad-stools where nervous symptoms are manifested, it would be prudent to try the use of atropine in the doses of from ½ to 0.002 of a milligramme.

The experience that we have reached in the search for an antidote against the action of the poisons of the Amanita, Lactarius, etc., by means of the subcutaneous injection of many substances, have given equally negative results. It is, however, important to continue these experiments, especially in the presence of the results obtained by Letellier. (The experiments of Letellier were confined to attempting the precipitation of the poison by the use of tannin.)

Experiments upon frogs were made with atropine, using it as the antidote for Amanitine, and *vice versa*, with pronounced success; but not until August, 1885, was atropine successfully brought face to face with Amanitine in the human system, as happened in the case of toad-stool poisoning in the Faris family, of Shenandoah, Pa., coming under the charge of Dr. S. E. Shadle, of that place, whose report will be found very valuable as indicating the symptoms of poisoning from eating of the Amanita verus, and the treatment pursued by him.

Immediately upon noticing these cases of poisoning in the public prints, the writer addressed a letter of inquiry to Shenandoah, which was fully responded to by Dr. Shadle, and samples of the toadstools eaten by the Faris family—selected by Mr. Faris, one of the survivors of the poisoning—were forwarded for identification.

Of those samples, two were harmless agarics and the other a white agaric—Amanita verus—one of the poisonous varieties of the Amanita. At the writer's request, Dr. Shadle wrote the following report in answer to numerous queries: * * * * * * *

The report of Dr. Shadle corroborates all former observations of the poisoning by Amanitine, in that the poison does not manifest itself until from eight to fifteen hours after ingestion and the peculiar dusky hue of the skin as one of its marked symptoms.

In relation to the latter, Mr. Palmer writes: "The absorption of the poison from the Amanita may take place not only by ingestion, but by contact with the skin, as through the hollow palm of the hand or arm; by the lungs, as I have proven by personal experiments made upon myself. In such a case the patient has all of the symptoms of having eaten of the mushrooms, *even to a peculiar leaden or ash-colored complection.*"

The possession of specimens of the toadstools eaten, the identification of an Amanita among them or not, as the case may be, the length of time elapsing between the eating and manifestations of the poison, will inform the physician as to whether or not Amanitine is at work and whether it must be met by atropine, or the case treated for a less virulent poison by milder remedies.

## NOTES ON FLORIDA FUNGI--No. 2.

BY W. W. CALKINS, CHICAGO, ILLINOIS.

The numerous and richly-developed species of *Polypori* naturally attract the explorer's first attention in a Florida forest. In a hard-wood hammock near Jacksonville, a large oak (*Quercus laurifolia*) may be seen in a half-decayed state. On the trunk, occupying a space twenty feet long and one foot wide, appears *Polyporus gilvus*, Fr. This is the largest specimen I have ever heard of. On the Pipe wood (*Leucothoe acuminata*) also on the *Magnolia* and *Ulmus*, the living bark is made brilliant by those peculiar rosette-like forms—*Hypochnus albocinctus*, Mont., and *H. rubrocinctus*, Ehrb.

The Lichenologists claim these species also, but they are very interesting, all the same. These are found in perfect fruit here during the winter months, when it is cool and there are frequent rains. The summers are long, dry and very hot, therefore not many fungous forms attain their full maturity. To see a whole forest of magnificent trees and shrubs, many of them strictly Southern plants, adorned with extraneous life of lower vegetable orders, lends variety and charm not to be found elsewhere, unless it be in a tropical jungle.

## NEW LITERATURE.

"REFUTATION DE L'OPINION DU DR. G. EUGEL TOUCHANT LES QUALITES COMESTIBLES DE L'AMANITA MUSCARIA, FR." Cap. F. Sarrazin. Revue Mycologique, 1er Janvier, 1886.

"FUNGI GALLICI EXSICCATI.—CENTURIE XXXVIe." C. Roumeguere. l. c.

"CHAMPIGNONS NOUVEAUX OU RARES DE L'AUBE——FASC. II." Par le Major Briard. l. c.

"CHAMPIGNONS DU BEARN (2E LISTE)." Par MM. E. Doassans et N. Patouillard. l. c.

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